Healthcare Improvement Scotland | SHTG Advice on health technologies

SHTG Assessment
February 2023

An assessment of the Feeling Good app

What were we asked to look at?

SHTG was asked by the developer of the Feeling Good app (following direction from the Scottish Government's digital mental health programme for independent review), to assess the evidence on the effectiveness of the Feeling Good app for improving depression and anxiety in clinical and non-clinical settings.

Why is this important?

Mental health and wellbeing is a major public health challenge in Scotland. Around one in four people experience mental ill-health each year.[1] Services are struggling to cope with demand and the COVID-19 pandemic has exacerbated mental health pressures across the country so that many people are not receiving the support they need. A digital app for mental health and wellbeing support has the potential to reach individuals in greater numbers. Through the convenience and reduction in stigma offered by remote access, a digital platform may also reach people who have not previously engaged with services.

What was our approach?

We undertook a literature review of published evidence on the Feeling Good app to address the questions of effectiveness, patient perspectives and organisational issues. The app developer supplied us with a number of unpublished evaluation reports on the use and effectiveness of Feeling Good.

In order to address domains relevant to digital technologies beyond our normal health technology assessment we considered NHS England Digital Technology Assessment Criteria (DTAC).[2] DTAC is an advisory assessment body for commissioning digital health technologies in NHS England and social care services launched in 2021. It sets out baseline standards for clinical safety, data protection, technical security, interoperability and usability and

accessibility. We also considered compliance with relevant regulations and best practice for digital apps, using a report from the Organisation for the Review of Care and Health Applications (ORCHA).[3] ORCHA review health and care apps using a standardised approach. They provide an advisory, rather than regulatory, service which evaluates compliance with current relevant standards, regulation and good practice.

What next?

SHTG's assessment of the evidence will be shared with the digital mental health team within the Scottish Government to inform decision making around the provision of their online mental health and wellbeing support.

Key points

- The Scottish Government's Mental Health Strategy 2017–2027[4] aims to improve access to appropriate support and effective care for all. The Digital Health and Care Strategy, 2021[5] sets out the role of digital technologies in supporting this aim. The digital strategy makes a commitment to increase access to evidence-based digital mental health treatments, products and services.
- As a digital mental health app, the Feeling Good app has the potential to reduce some aspects of inequalities by widening access, providing support for those who may not necessarily be comfortable seeking help through existing conventional services, and improving self-management of mental health. Reading difficulties do not impede use of the app as the programme is delivered via audio files.
- Assessment of the digital aspects of this technology (assurance, data security, protection and privacy) as assessed using the NHS England DTAC and by ORCHA (clinical, data and usability standards) found no issues of concern.
- The published evidence base was examined and was insufficient to gauge the clinical effectiveness of the Feeling Good app. A published feasibility study which looked at clinical effectiveness, and one linked economic evaluation, were identified. Several unpublished descriptive reports, produced by the developer which evaluated use, engagement, change in mood scores and free-text feedback among different population groups were also identified.
- The cost effectiveness of Feeling Good remains highly uncertain due to the limiting model assumptions in the one linked economic evaluation that was identified.
- Further research into the effectiveness of the Feeling Good app is required to demonstrate the impact of Feeling Good on clinical outcomes and patient benefits.
- Suggestions for further evidence collection include:
    - An adequately-powered prospective study with a control group, and recording and reporting a description of all relevant baseline characteristics of users. Changes in mood score for each individual from baseline to the assessment time points should be measured in order that clinical and statistical significance of any impact can be assessed. Reporting should be clear and comprehensive to allow robust assessment of data gathered.
    - An updated economic evaluation should be conducted. It should incorporate an adequate time horizon in order to capture all meaningful

differences between costs and effects of the considered alternatives. Potential bias should be avoided through the use of direct or adequately adjusted indirect comparative efficacy data showing clinically meaningful differences in depression scores. Long-term outcomes such as probability of relapse and mortality should also be captured. Health-related quality of life should be preferably measured using the EuroQol–5 Dimension 3 level (EQ-5 D-3 L) questionnaire with health state utility weights derived using the latest UK-specific value set. Healthcare resource use reflecting current Scottish clinical practice should also be included in the model.

Contents

Introduction

Mental health and wellbeing are major public health challenges in Scotland, with around one in four people experiencing mental ill-health each year.[1] The COVID-19 pandemic has exacerbated mental health pressures across the country. The Scottish Government's Mental Health Strategy 2017–2027[4] aims to improve access to appropriate support and effective care for all, while the Digital Health and Care Strategy[5] sets out the role of digital technologies in contributing to this aim. These strategies make a commitment to increase access to evidence-based digital mental health treatments, products and services. In addition to any clinical and wellbeing benefits of mental health support, online tools offer potential benefits to users in terms of reducing stigma through anonymous access, providing support for those who may not necessarily be comfortable seeking help through existing conventional services, and improving self-management of mental health. There are no geographical or time constraints to access. While online tools may reduce inequalities through widening access, the use of digital interventions relies on users being able to access and operate digital technology.

Research question

What evidence is available to support the use of the Feeling Good app to improve mood, in clinical (depressed and anxious patients) and in non-clinical populations?

Literature search

A systematic search of the literature was carried out between 22 and 23 August 2022 to identify systematic reviews and meta-analyses, health technology assessments, primary studies, evaluations and other evidence-based reports. Databases searched were: Medline, Embase, PsycInfo, Cochrane and Web of Science Core Collection. Results were limited to English language.

Key websites were searched for guidelines, policy documents, clinical summaries, economic studies and ongoing trials.

Concepts used in all searches included: positive mental training, Feeling Good app or programme. A full list of resources searched and the search terms used are available on request.

Additional unpublished reports were supplied by the developer.

Methods

This work is part of an SHTG pilot in assessing the value of digital technologies. We undertook a literature review of published evidence on the Feeling Good app to evaluate the questions of clinical and cost effectiveness. The developer supplied us with a number of unpublished evaluation reports.

We used the DTAC report to examine the clinical safety, data protection, technical security, interoperability and usability and accessibility of the Feeling Good app. The DTAC review was carried out by ORCHA using information provided by the developer and assessed by the ORCHA assessment team and wider subject matter experts. We used the ORCHA report as a guide to examine the performance of the Feeling Good app in terms of clinical, data and usability aspects based on information in the app, on the relevant app store or on a supporting website. The ORCHA report remains valid until a new version of the app is produced. While this SHTG assessment report is relevant at the time of publication, updates or modifications made by the developer after this date could invalidate the conclusions.

The Feeling Good app is classed as a tier C digital technology under the National Institute for Health and Care Excellence (NICE) evidence standards framework (ESF) for digital technologies.[6] The ESF sets the evidence level required for each tier based on the potential risk to services users. The Feeling Good programme, as a tool to reduce depression and anxiety, sits in the highest tier for digital health technologies that treat and diagnose medical conditions or guide care choices and is included in the subsection of 'drive clinical management'.

Health technology description

The Feeling Good app is a set of audio files delivered via an app to provide mental health and wellbeing support to improve mood and wellbeing. It is described by the developers as positive mental training based on sports psychology. It was originally developed by a general practitioner (GP) and health psychologist to support GPs treating emotionally distressed patients. It consists of breathing exercises, positive reappraisal of memories and visualisation techniques. Immediate access to the service is available following registration with the app.

The Feeling Good programme was launched in the NHS in 2005. It is currently available in Lothian and Northamptonshire for use by patients with anxiety and depression and by staff. It has been in use in Lothian since 2010 and in Northamptonshire since 2015. It is available for health and social care workers for personal wellbeing and resilience across Scotland via the NHS wellbeing hub, and in various Scottish colleges and Universities and some

workplaces including Scottish Parliament (Feeling Good, personal communication). The Feeling Good programme is freely available to people in these institutions with use of a referral code. The programme was originally accessed by CDs (compact discs), then by MP3 (Moving Picture Experts Group Audio Layer 3) downloads via their website from 2010, and since 2017 via the Feeling Good app Feeling Good for Life module.

Mood screening tools are integrated into the app and are voluntarily completed at baseline (reported as week 0 or week 1), week 2 and at week 7 or week 10. The questionnaires gather scores for anxiety (Generalised Anxiety Disorder Assessment, GAD-7) and depression (Patient Health Questionnaire depression scale, PHQ-8 or PHQ-9). User experience questions are incorporated into the questionnaires. Individual use is anonymous. Non-identifying codes are attributed to individuals in order to allow anonymous tracking of a single user mood scores over time. Non-identifiable personal information on age, gender and race is also collected.

Intended use

The app is intended to benefit a wide base of users; to treat people with anxiety, depression, stress and sleep problems, to treat the physical symptoms of stress and anxiety, as well as to increase peoples' wellbeing and positive outlook. The app consists of audio files and therefore does not impede use for people with reading difficulties. This assessment is of the core programme for adults. The modules available for teenagers and the additional functions such as sleep problems, have not been assessed. The evaluation reports supplied by the developer did not always report which modules were and were not included. Provision of digital services (which may include mental health apps) sit within the mental health patient pathways in primary care in NHSScotland.

Digital technology compliance

In August 2022, the Feeling Good app achieved an ORCHA score of 90%, above the 65% deemed by ORCHA to indicate satisfactory baseline compliance. This comprised a data and security score of 86%, a professional assurance score of 99% and a usability/accessibility score of 78%.

In June 2021, ORCHA independently assessed the Feeling Good app against the DTAC standards and found the Feeling Good app to meet each standard (clinical safety, data protection, technical security, interoperability and usability and accessibility).

Clinical effectiveness

This assessment considered the available evidence on the use of the Feeling Good app to improve depression and anxiety scores, and also took into account usage levels and engagement with the app.

We identified one published UK feasibility study in a clinical population[7] and seven unpublished summary evaluation reports supplied by the developer.[8-14] Three of the seven unpublished reports were from clinical settings, two from non-clinical settings and one from health and social care settings. The seventh was an online evaluation on the use of the Feeling Good app by health professionals.

Published evidence

The UK feasibility study is described by the authors as a partially randomised preference (PRP) design with benchmarking strategy. [7] This means that the results were compared with previous independent studies looking at other mental health treatments in order to examine the clinical effectiveness of the Feeling Good app. Only four people were included in the comparison group, there was a drop-out rate of 18% in the intervention group and there were baseline differences between the intervention and comparison groups. No larger follow-up study was carried out. As a result of these limitations, no conclusions can be drawn from this study.

Evaluations using the Feeling Good app

The developer provided seven unpublished evaluation reports on the use of, engagement with and benefit of the Feeling Good app.[8-14] Referral codes were provided to allow people to access the app and use was assessed using Google analytics. Referral code use and questionnaire completion (at baseline, week 2 and week 7 or week 10) were used as proxies for app engagement. No data was collected at the end of the programme (week 12). The benefit of the Feeling Good programme was assessed using mood data from user-completed anonymous questionnaires. The questionnaires gathered scores for anxiety (Generalised Anxiety Disorder Assessment, GAD-7) and depression (Patient Health Questionnaire depression scale, PHQ-8 or PHQ-9). The questionnaires are built into the app and can be voluntarily completed by the user to monitor their progress. In a survey, the developers also asked users about their experience of the app and its helpfulness.

The evaluations were carried out between 2019-2022 and data collection periods ranged from 6 to 18 months. Three reports describe evaluations carried out in clinical settings in Northampton [8, 9] and Edinburgh.[10] There were several reports on a population in health and

social care settings in the Lothian area over a number of years. We report on the most recent report which had matched data 2021.[14] Two reports described the use of and engagement with the Feeling Good app in non-clinical settings via the National Wellbeing Hub[11] and the University of Edinburgh.[12] The National Wellbeing Hub is a partnership initiative between The Rivers Centre for Traumatic Stress and Scottish Government Health and Social Care Directorates with the support and engagement of key partners (NHS Boards, Health and Social Care Partnerships, Professional Bodies and Associations, Coalitions and Trade Unions).

An unpublished report described an online evaluation survey carried out in 2011 with health professionals attending Feeling Good training sessions in England.[13]

Summary data from the evaluations are presented in *Tables 1* and *2*.

Use and engagement with app

Across six evaluation reports, referral codes were used between 326 and 3,271 times within the evaluation periods. The highest rate of use was in the University of Edinburgh with codes used 3,271 times in 6 months. The location, setting, evaluation period and number of times the codes were used are shown in *Table 1*.

Table 1: Use and engagement with Feeling Good app – location, setting, evaluation period and code use across the evaluations

Location	Setting	Evaluation period	Number of codes used
Northampton, 2019	via GP	8 months	697
Northampton, 2020–2021	Referred to the app in primary care settings and wellbeing clinics	9 months	663
Royal Hospital, Edinburgh, 2020–2021	Acute Receiving Unit via senior community psychiatric nurses and on wards by psychiatric nurses and occupational therapists	9 months	326
NHS Lothian, 2020-2021	Health and social care settings	9 months	2,651

National Wellbeing Hub, 2020–2022	Health and social care employees	18 months	3,271
University of Edinburgh, 2019	University students and staff	Not clear	2,036

The number of people completing the in-app questionnaire fell from baseline to the 2 week point by between 80–85%, and from baseline to week 7 (or at week 10 for University of Edinburgh), by between 92–99%. Numbers completing the questionnaire at each stage are shown in *Table 2.*

Table 2: Engagement with Feeling Good app – number of people (matched) completing questionnaire at baseline, 2 weeks and 7 weeks (percentage drop in number of users completing questionnaire)

Location	Number of participants at baseline	Number of participants at week 2 (and % drop compared with baseline)	Number of participants at week 7 (and % drop compared with baseline)
Northampton, 2019	607	123 (80%)	59 (90%)
Northampton, 2020 -2021	591	82 (86%)	24 (96%)
Royal Hospital, Edinburgh, 2020-2021	260	38 (85%)	7 (97%)
Lothian, 2020–2021	2,269	384 (83%)	116 (95%)
National Wellbeing Hub, October 2020 to March 2022	2,726	376 (86%)	98 (96%)
	baseline		**10 weeks**
University of Edinburgh, 2019	1,139		254 (78%)

Benefit of the app

In the evaluation reports, reported depression and anxiety scores were matched scores, for those who completed two and three of the in-app mood questionnaires and represent a small proportion of those who used the code. Of the 10,084 people who accessed the codes

from these six evaluations, 463 (4.6%) completed all in-app questionnaires, so these scores are from a self-selected group motivated to complete the questionnaires and cannot be taken to represent the majority of people (95.4%) who used the referral code.

The scores reported represent the average scores at baseline and at the other discrete questionnaire time points, so they do not reflect the average of the individual's change in severity scores. For those who completed all the mood questionnaires, average depression scores on the PHQ-9 and average anxiety scores on the GAD-7 fell from baseline to the final questionnaire. There were no measures of spread around the mean so we do not have information about how many of the app users had increased scores or decreased scores. All questionnaire scores are shown in *Appendix 1, Tables 3-5*.

At 2 and 7 weeks, users were asked 'has it [the Feeling Good app] helped, if so how'? For each setting there were between 8 and 127 positive comments (no negative comments reported) most of which related to increased relaxation and as an aid to sleep.

A further unpublished summary report[13] described an online evaluation on use of the Feeling Good programme, undertaken in 2011 with health professionals (35% nurses, 21% GPs, 10% counsellors, 34% mix of other health professions) attending Feeling Good training sessions in England. Attendees were asked about both their own use and patients' use. Intended as a report for internal use, there was limited detail and we were not able to appraise the quality of the methods used for data collection. The authors reported that 203 professionals were surveyed and they received between 43–50 responses for each question. A number of benefits were described by attendees, including a keenness to offer the app as a treatment option, less likely to prescribe antidepressants to a depressed patient, and an interest in the use of the app for themselves. Conclusions cannot be generalised as this was self-selected group attending Feeling Good training, it is not possible to know how many of the total 203 attendees responded to each question.

Cost effectiveness

We identified one relevant economic evaluation in the literature.[15] The study compared the cost effectiveness of the Feeling Good programme with computerised cognitive behavioural therapy (Beating the Blues (BtB)) and usual care. The analysis considered two populations, patients with either moderate or severe depression at baseline.

The economic evaluation incorporated a decision-tree model structure with five branches, based on depression severity measured using the Beck Depression Inventory (BDI) score. The model had a short time horizon of 5 months. The authors reported that, following use of the Feeling Good app, the post-treatment distribution of depression severity was based

on observational data from a feasibility study in Scotland. [7] Depression severity data for BtB and usual care came from a randomised controlled trial.[16]

Costs included in the analysis were associated with clinical support, training of clinical staff, hardware, software, screening and service use. Severity-specific utility weights, measured using EQ-5 D and short-form six dimension (SF-6 D) scores, were sourced from the available literature.[17]

Base case results for both the moderate and the severe depression groups showed the Feeling Good programme was the dominant strategy (that is, it was cost saving and more effective), with the exception of the comparison with BtB in the moderate group, where Feeling Good was equally effective but marginally cost saving (- £27.21). In the moderate depression group compared with usual care, Feeling Good was associated with a quality adjusted life year (QALY) gain of 0.04 and a cost saving of £44.07. Feeling Good was found to be more cost effective in the severe group, generating QALY gains of 0.09 and 0.07 and savings of £310.11 and £306.30 compared with usual care and BtB, respectively.

Due to an absence of relevant comparative efficacy data, the short model time horizon and outdated costs and other limiting model assumptions, the cost effectiveness of Feeling Good remains highly uncertain.

Safety

The developers state that no safety issues have been reported to them.

Critical appraisal and suggestions for further evidence collection

In assessing the evidence for the Feeling Good app, we identified a number of considerations to help guide further evidence collection.

Clinical effectiveness

- Reporting: The evaluation reports produced by the developer would benefit from clear and comprehensive reporting to allow for full appraisal of the data and methodology. Numbers must be reported, rather than percentages alone. If error bars are shown on a plot, figures should be given in the text or on the table as it is not possible to take an accurate reading from the plot.
- Baseline characteristics: The University of Edinburgh report stated that 45% (78) of those using the University of Edinburgh code and who completed all in-app mood

questionnaires were moderately or severely depressed at baseline. The other reports would benefit from similar descriptions of baseline levels of depression or anxiety and accurate reporting of how patients were selected.

- Sample: The number of people who completed the questionnaires made up a small proportion of the total number who had accessed the codes. For a robust assessment of app effectiveness, a prospective study to gather data on outcomes from participants completing the questionnaire should be carried out.
- The evidence would be strengthened by knowledge of who used the codes. Due to anonymity, we do not know how the codes were used, for example, the codes could have been shared with friends and family. Descriptions of characteristics of the users, especially mental health diagnosis and antidepressant use or other interventions being used by patients, would allow a more accurate assessment of the app intervention as well as appraisal of who the app may benefit.
- Data should be gathered on continued use of the app over the duration of the programme. While numbers are available for those accessing the app, we do not have information on how the app was used, and how many times, including how many people continued the course.
- The data used to demonstrate change in scores across time show only averaged scores at discrete time points without indication of the spread of scores or how scores changed for individuals. Spread around the mean should be calculated and reported in figures and means of change in scores must be calculated and reported to give a valid measure of the impact of the intervention and in order for statistical and clinical significance to be determined.

Economic evaluation report

- Direct comparisons: When possible, economic evaluation should not be based on naïve comparisons, which can lead to bias due to potential differences in populations between the included studies.
- Baseline characteristics: Baseline characteristics must be fully recorded and reported in order to understand whether samples are comparable.
- Comparable groups: Important factors which potentially affect mood scores should be balanced between groups, in this case, antidepressants were not allowed in the Feeling Good arm, but pharmacotherapy was allowed in the BtB arm and details should be reported.
- Reporting of scores: Consideration should be given to the reporting of scores, in the economic evaluation, post-treatment severity distributions could not be verified since the two clinical studies only report improvement in overall BDI scores.

- Time horizon: The economic model should have a longer time horizon, should incorporate mortality and allow for the possibility of relapse. The latter two are important factors when assessing treatment efficacy of mental health interventions.
- Up to date data: The results used should be up to date in order to be relevant; the study is over 10 years old and thus costs are out of date, the technologies have progressed and it is not possible to know whether patient pathways are comparable to those of today.

Conclusions and recommendations for research

The Feeling Good app achieved a high score on data and security, professional assurance and usability/accessibility as assessed by ORCHA, and met the DTAC standards in clinical safety, data protection, technical security, interoperability and usability and accessibility.

Limited conclusions can be made from survey data from an online evaluation of the use of the Feeling Good programme by health professionals (both personal and patient use).

Evidence of clinical and cost effectiveness was limited and further research is required in this area.

There is a need for controlled studies and evaluations to gather more data to evaluate whether the Feeling Good app adds benefit as a tool to improve depression and anxiety scores in clinical and non-clinical populations.

In order to meaningfully understand how the scores change over time, each individual's change from baseline should be calculated and means and estimation of variance of the distribution of these changes in score must be calculated and reported. Studies should record and report relevant baseline characteristics, especially mental health status, this would allow identification of the groups that may receive benefit. Details on these suggestions for further evidence gathering are offered within the report.

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Scottish Health Technologies Group development team

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Appendix 1

Mood questionnaire scores reported in evaluations

Table 3: Number of participants, mean depression and anxiety scores at baseline and discrete time points in three clinical settings (Northampton 2019, Northampton 2021 to 2022 and Edinburgh 2021)

Depression (PHQ-8 and PHQ-9)				
	Number of participants	Mean score at baseline	Mean score at week 2	Mean score at week 7
Northampton 2019				
All people who completed PHQ-9 at baseline only	607	14.8	No data	No data
People who completed PHQ-9 at baseline and week 2 (subset of all)	123	15.4	11.4	No data
People who completed PHQ-9 at baseline, week 2 & 7 (subset of all)	59	14.1	10.20	8.20
Northampton 2020-2021				
People who completed PHQ-8at baseline only	591	13.61	No data	No data
People who completed PHQ-8 at baseline and week 2 (subset of all)	82	12.94	11.23	No data
People who completed PHQ-8 at baseline and week 2 & 7 (subset of all)	24	12.50	9.33	8.00
Royal Hospital, Edinburgh, 2020–2021				
People who completed PHQ-8 at baseline only	260	15.71	No data	No data

People who completed PHQ-8 at baseline and week 2 (subset of all)	38	17.39	14.50	No data
People who completed PHQ-8 at baseline and week 2 & 7 (subset of all)	7	17.71	13.43	8.00
Anxiety				
Northampton 2019				
People who completed GAD-7 at baseline	471	13.4	No data	No data
People who completed GAD-7 at baseline and week 2 (subset of all)	74	13.50	10.10	No data
People who completed GAD-7 at baseline and week 2 & 7 (subset of all)	44	13.50	9.80	8.30
Northampton 2021-2022				
People who completed GAD-7 at baseline only	591	12.66	No data	No data
People who completed GAD-7 at baseline and week 2 (subset of all)	82	12.34	10.17	No data
People who completed GAD-7 at baseline week and 2 & 7 (subset of all)	24	11.88	8.29	6.83
Royal Hospital, Edinburgh, 2020–2021				

People who completed GAD-7 at baseline only	260	14.13	No data	No data
People who completed GAD-7 at baseline and week 2 (subset of all)	38	14.47	11.34	No data
People who completed GAD7 at baseline and week 2 & 7 (subset of all)	7	14.86	11.43	6.14

Table 4: Number of participants, mean depression and anxiety scores at baseline and discrete time points in two non-clinical settings (National Wellbeing Hub 2020 to 2022, University of Edinburgh 2019)

Depression (PHQ9)				
	Number of participants	Mean score at baseline	Mean score at week 2	Mean score at week 7
National wellbeing hub October 2020 to March 2022				
People who completed PHQ-8 at baseline only	2,726	10.21	No data	No data
People who completed PHQ-8 at baseline and week 2 (subset of all)	376	10.69	8.20	No data
People Who Completed PHQ-8at Baseline And Week 2 & 7 (subset of all)	98	10.29	7.28	6.72
University of Edinburgh, 2019				
	Number of participants	Mean PHQ-9 score at week 1		Mean PHQ-9 score at week 10
People who completed PHQ-9 at week 1 only (baseline)	1,139	Not reported	No data	No data

People Who Completed PHQ-9 At Week 1 & 10 (subset of all)	174	10.30		8.30
Anxiety				
National wellbeing hub October 2020 to March 2022				
People who completed GAD-7 at baseline only	2,726	9.51	No data	No data
People who completed GAD-7 at baseline and week 2 (subset of all)	376	10.15	7.67	No data
People Who Completed GAD-7 At Baseline And Week 2 & 7 (subset of all)	98	10.48	7.07	6.16
University of Edinburgh, 2019				
	Number of participants	Mean score at baseline		Mean score at week 10
People who completed GAD-7 at week 1 only (baseline)	1,139	No data		No data
People Who Completed GAD-7 At Week 1 & 10 (subset of all)	174	10.20		8.00

Table 5: Number of participants, mean depression and anxiety scores at baseline and discrete time points in health and social care settings and non-clinical settings (Lothian 2021)

Depression (PHQ9)				
	Number of participants	Mean PHQ9 score at week 0	Mean PHQ9 score at week 2	Mean PHQ9 score at week 7
People who completed PHQ-9 at baseline only	2,269	13.43	No data	No data
People who completed PHQ-9 at baseline and week 2 (subset of all)	384	12.94	10.32	No data
People who completed PHQ-9 at baseline and week 2 & 7 (subset of all)	116	12.64	9.63	8.46
Anxiety				
People who completed GAD-7 at baseline only	2,269	12.71	No data	No data
People who completed GAD-7 at baseline and week 2 (subset of all)	384	12.65	9.34	No data
People who completed GAD-7 at baseline and week 2 & 7 (subset of all)	116	12.30	8.79	7.90

Appendix 2

Abbreviations and definitions

BDI	Beck depression inventory
BtB	beating the blues
CD	compact disc
COVID-19	coronavirus disease 2019
DMH	digital mental health
DTAC	digital technology assessment criteria
EQ-5 D	EuroQol–5 dimension
GAD-7	generalised anxiety disorder questionnaire-7 item
GHQ-12	short general health questionnaire
GP	general practitioner
MP3	moving picture experts group audio layer 3
ORCHA	organisation for the review of care and health applications
PRP	partially randomised preference
PHQ-8	patient health questionnaire-8 item
PHQ-9	patient health questionnaire-9 item
QALY	quality adjusted life years
RCT	randomised controlled trial
SF-6 D	short-form six dimension
SD	standard deviation
SHTG	Scottish Health Technologies Group